

No.

200400253



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Seminis Vegetable Seeds, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

LETTUCE

'PS 6545701'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this third day of May, in the year two thousand and seven.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of Agriculture

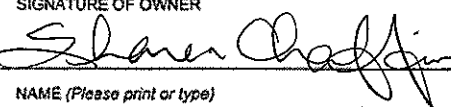
U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

KAD 9/2/2006

1. NAME OF OWNER Seminis Vegetable Seeds, Inc.		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME PS 6545701		3. VARIETY NAME PS 6545701	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) 2700 Camino del Sol Oxnard, CA 93030-7967		5. TELEPHONE (include area code) 805 647 1572		FOR OFFICIAL USE ONLY PVPO NUMBER 200400253	
		6. FAX (include area code) 805 918 2545		FILING DATE JUNE 28, 2004	
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Corporation		8. IF INCORPORATED, GIVE STATE OF INCORPORATION California		9. DATE OF INCORPORATION 04-Jun-1962	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers)				FILING AND EXAMINATION FEES: \$ 3652.00 DATE 6/28/04 CERTIFICATION FEE: \$ 768.00 DATE 10/31/06	
Sharen Chaffin & Carol Miller Seminis Vegetable Seeds, Inc. 37437 State Hwy 16 Woodland CA 95616				Marcel Bruins Seminis Vegetable Seeds, Inc. Nude 54D 6702 DN Wageningen The Netherlands mbruins@svseeds.nl Ph: 31 317 450218 Fax: 31 317 450217	
11. TELEPHONE (include area code) 530 669 6172		12. FAX (include area code) 530 666 4426		13. E-MAIL sharen.chaffin@seminis.com	
14. CROP KIND (Common Name) lettuce		15. GENUS AND SPECIES NAME OF CROP Lactuca Sativa L.		16. FAMILY NAME (Botanical) Asteraceae	
17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
<input checked="" type="checkbox"/> a. Exhibit A. Origin and Breeding History of the Variety <input checked="" type="checkbox"/> b. Exhibit B. Statement of Distinctness <input checked="" type="checkbox"/> c. Exhibit C. Objective Description of Variety <input type="checkbox"/> d. Exhibit D. Additional Description of the Variety (Optional) <input checked="" type="checkbox"/> e. Exhibit E. Statement of the Basis of the Owner's Ownership <input checked="" type="checkbox"/> f. Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) <input checked="" type="checkbox"/> g. Filing and Examination Fee (\$2,705), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)		19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? See Section 83(a) of the Plant Variety Protection Act <input type="checkbox"/> YES (If "yes", answer items 20 and 21 below) <input checked="" type="checkbox"/> NO (If "no", go to item 22)			
20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED		21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? IF YES, SPECIFY THE <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED NUMBER 1,2,3, etc. (If additional explanation is necessary, please use the space indicated on the reverse.)			
22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)			
24. The owners declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF OWNER 			SIGNATURE OF OWNER		
NAME (Please print or type) Sharen Chaffin			NAME (Please print or type)		
CAPACITY OR TITLE Specialist		DATE 6-24-04		CAPACITY OR TITLE 1	

GENERAL: To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$2,705 (\$320 filing fee and \$2,385 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 500, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$320 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvpo/pvp.htm>

ITEM

- 18a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;
(2) the details of subsequent stages of selection and multiplication;
(3) evidence of uniformity and stability; and
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
(1) identify these varieties and state all differences objectively;
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
19. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See *Regulations and Rules of Practice, Section 97.103*).
22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
23. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

21. CONTINUED FROM FRONT (Please provide a statement as to the limitation and sequence of generations that may be certified.)

22. CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

23. CONTINUED FROM FRONT (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

AU: PBR # 2004/173; Filed 5/27/2004

NOTES: It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center—East, Beltsville, MD 20705. Telephone: (301) 504-8089. <http://www.ams.usda.gov/lsg/seed/lsg-sd.htm>

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this collection of information is (0581-0055). The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

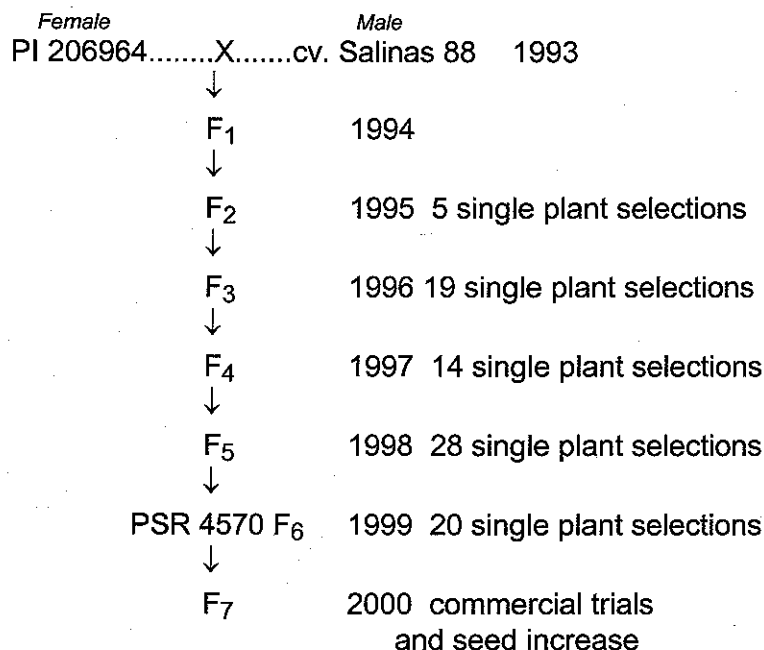
S&T-470 (04-01) designed by the Plant Variety Protection Office with WordPerfect 6.0a. Replaces STD-470 (02-99) which is obsolete.

RAO
9/2/06

2004,00253
PS 6545701

Exhibit A. Origin and Breeding History of Lettuce SVR 4570 (PS 6545701)

Pedigree of SVR 4570



PSR 4570 originated in 1993 with the cross USDA Plant Introduction line (PI) 206964 by cv. Salinas 88. Single plant selections were made in subsequent years in the area of intended commercialization. By F₆ a group of 20 families was judged uniform and bulked for trialing and seed increase. An F₇ mass was trialed in 2000 and an increase of F₇ seed was produced in the San Joaquin Valley of California that year.

The breeding work was carried out by Dr. William Waycott at the Seminis Vegetable Seed's Research Station at Arroyo Grande, California. Some test plots were conducted in 2001, while replicated field trials were carried out in most production areas throughout coastal and desert growing districts of California and Arizona during the year 2002 and subsequent years.

The breeding method employed was pedigree selection, using both single plant selection and mass selection practices. The selection criteria for SVR 4570 were:

1. identify a cultivar with the outer appearance of a romaine, but with internal characteristics of an iceberg (crisphead), such as color, texture, taste, and density, and
2. dark outer color with blanched inner color.

In field trials of SVR 4570 during 2001 and 2002, we have seen neither genetic variants nor off-types in more than 5,500 plants.

In trials of SVR 4570 during the **last six years covering generations F₇ to F₁₂**, we have seen neither genetic variants nor off-types in more than 9,500 plants, **indicating that this variety is genetically uniform and stable.**

SVR 4570 is similar in morphology when compared to another experimental line bred by Seminis Vegetable Seeds, submitted for PVP protection in 2001 under the number PSR 4569. The difference between PSR 4569 and SVR 4570 is the size, SVR 4570 is larger, and by the sowing period. SVR 4570 has sowing dates for winter and early spring harvest in California and Arizona, while PSR 4569 has sowing dates for summer production in California. Due to these unique characteristics, SVR 4570 is described as a new type of lettuce ideally suited for the America fresh vegetable industry. SVR 4570 has the external dimensions (shape and stature) of a romaine variety, but its internal qualities all come from its crisphead background. The internal makeup of SVR 4570 is decidedly crisphead, exhibited by its thick, crisp interior leaves, its tight head conformation, interior pale color, and a distinct iceberg taste. Potentially mistaken as a romaine cultivar, SVR 4570 is clearly a crisphead in all aspects except for its shape. SVR 4570 is adapted to the desert production areas of California and Arizona and the early spring production areas of the San Joaquin Valley. It is susceptible to all California pathotypes of downy mildew and to lettuce mosaic virus, **but resistant to corky root rot, strain CA1**. When compared to the commercially available cultivars of romaine and crisphead grown in USA, other than its similarity to PSR 4569, SVR 4570 is clearly distinctive and for this reason was selected because of its unique external and internal qualities.

Phenotypically, SVR 4570 is distinct from all commercial cultivars of lettuce, however, since its outer appearance resembles a romaine, the cultivar Green Towers was selected as the most similar cultivar for comparison. In replicated field trials, heads of SVR 4570 were narrower (**25.1 cm vs. 31.1 cm**), shorter (**28.5 cm vs. 30.4 cm**), but heavier (**1407 g vs. 1120 g**) than Green Towers, and had longer core lengths (**56 days to 15 cm vs. 64 days**) prior to harvest time (Table 1). The exterior leaf color of SVR 4570 was darker (RHC color chart 146A), versus 146B for Green Towers, while the interior leaf color of SVR 4570 was lighter (144A) versus 146B for Green Towers. Leaf thickness of the largest leaf measured at 1.4 mm for SVR 4570 and 1.0 mm for Green Towers. From these diverse indicators, SVR 4570 clearly represents a new and unusual combination of romaine and crisphead characters in one lettuce variety.

The data presented here are statistically different at the 95% confidence level, exhibiting a range of means for plant height from 28.28 to 28.47 for SVR 4570 and from 30.20 to 30.45 for cv. Green Towers, of means for head diameter from 24.62 to 25.03 for SVR 4570 and from 30.85 to 31.35 for cv. Green Towers, and of means for head weight from 1404.19 to 1411.87 for SVR 4570 and from 1115.15 to 1124.85 for cv. Greet Towers, using the 0.95 probability of generating confidence intervals (CI) that contains the means.

Table 1. Evaluation of PS 6545701 and the most similar cultivar, Green Towers, for several important characters.

Trial No	Cultivar	Rep No.	Exter. Leaf Color ^a	Inter. Leaf Color ^b	Plant Height ^c	Head Diam. ^d	Head Weight ^e	Leaf Thickness ^f	No. of Days to 15 cm ^g
Trial 1: Evaluated: 22 Jan 2004 Yuma, AZ	PSR 4570:	Rep. 1	146A	144A	28.3±0.4	24.9±0.9	1422±21.1	1.4±0.1	55
		Rep. 2	146A	144A	28.9±0.5	25.2±0.8	1389±22.1	1.3±0.1	56
		Average:	146A	144A	28.6±0.5	25.1±0.9	1405±21.6	1.4±0.1	56
	Green Towers:	Rep. 1	146B	146B	30.6±0.6	31.4±0.9	1145±20.4	1.0±0.1	64
		Rep. 2	146B	146B	30.5±0.5	31.0±1.2	1096±22.7	0.9±0.2	63
		Average:	146B	146B	30.6±0.5	31.2±1.1	1121±21.6	1.0±0.2	64
Trial 2: Evaluated: 16 Feb 2004 Yuma, AZ	PSR 4570:	Rep. 1	146A	144A	27.9±0.5	25.2±1.0	1388±22.0	1.5±0.2	55
		Rep. 2	146A	144A	28.7±0.3	24.7±0.9	1429±21.8	1.3±0.1	56
		Average:	146A	144A	28.3±0.4	25.0±1.0	1409±21.9	1.4±0.2	56
	Green Towers:	Rep. 1	146B	146B	29.8±0.6	30.7±1.1	1137±22.4	0.8±0.1	64
		Rep. 2	146B	146B	30.4±0.6	31.3±1.2	1102±21.1	0.9±0.2	62
		Average:	146B	146B	30.1±0.6	31.0±1.2	1120±21.8	0.9±0.2	63

Range of variation among means of statistically significant differences at the 95% level using the confidence interval [CI = mean ± (SDXSE)]:
 PSR 4570 28.28 to 28.47 24.62 to 25.03 1404.19 to 1411.87
 cv. Desert Spring 30.20 to 30.45 30.85 to 31.35 1115.15 to 1124.85

- ^a Exterior leaf color evaluation was done on the first large, mature leaf using the Royal Horticultural Society color chart, U.K.
^b Interior leaf color evaluation was done on the twenty-fifth mature leaf from the outside using the Royal Horticultural Society color chart, U.K.
^c Mean plant height using two sowing dates of 20 plants per replication in cm ± standard deviation.
^d Mean head diameter using two sowing dates of 20 plants per replication in cm ± standard deviation.
^e Mean head weight using two sowing dates of 20 plants per replication in grams ± standard deviation.
^f Mean leaf thickness of the leaf margin of the largest leaf using two sowing dates of 10 plants per replication in mm ± standard deviation.
^g Mean number of days until stem reaches 15 cm using two replications of 20 plants each.

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To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

**U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705**

EXHIBIT C
(Lettuce)

**OBJECTIVE DESCRIPTION OF VARIETY
LETTUCE (*Lactuca sativa* L.)**

NA	Seminis Vegetable Seeds, Inc. 2700 Camino del Sol Oxnard, CA 93030-7967	FOR OFFICIAL USE ONLY
AL		FVPO NUMBER 200400253
		VARIETY NAME
		EXPERIMENTAL DESIGNATION SVR 4570

Place the appropriate number that describes the varietal character in the boxes below. Place a zero in the first box (eg. or) when number is either 99 or less or 9 or less. Measured data should be the mean of an appropriate number (at least 20) of well spaced plants. Royal Horticultural Society or any recognized color standard may be used to determine plant colors.

The location of the test area is: ARIZONA, CALIFORNIA Color System Used: ROYAL HORT. Soc.

SPECIFIC VARIETIES USED FOR COMPARISON AS CHECK VARIETIES IN THIS APPLICATION: Use standard regional check varieties which are adapted to your area. One of the comparison varieties must be the most similar variety used in Exhibit B.

Application Variety (a1.) SVR 4570 Most Similar Variety (c1.) GREEN TOWERS

Standard Regional Check Variety (c2.) PARRIS ISLAND COS

1. PLANT TYPE: (See list of suggested check varieties page 4.)

01= Cutting/Leaf	04= Cos or Romaine	07= Salinas Group	10= Latin
02= Butterhead	05= Great Lakes Group	08= Eastern (Ithaca) Group	11= OTHER (Specify below):
03= Bibb	06= Vanguard Group	09= Stem	

(a1.) (c1.) (c2.)

2. SEED:

(a1.) <input type="text" value="2"/>	COLOR	(a1.) <input type="text" value="2"/>	LIGHT DORMANCY	(a1.) <input type="text" value="1"/>	HEAT DORMANCY
(c1.) <input type="text" value="1"/>	1= White (Silver Grey)	(c1.) <input type="text" value="2"/>	1= Light Required	(c1.) <input type="text" value="1"/>	1= Susceptible
(c2.) <input type="text" value="1"/>	2= Black (Grey Brown)	(c2.) <input type="text" value="2"/>	2= Light Not Required	(c2.) <input type="text" value="1"/>	2= Not Susceptible
	3= Brown (Amber)				

3. COTYLEDON TO FOURTH LEAF STAGE: NOTE: Provide a color photograph or photocopy of the fourth leaf from 20 day old seedling grown under optimal conditions.

SHAPE OF COTYLEDONS: 1=Broad 2= Intermediate 3= Spatulate

(a1.) (c1.) (c2.)

3. Cotyledon to Fourth Leaf Stage (Continued)

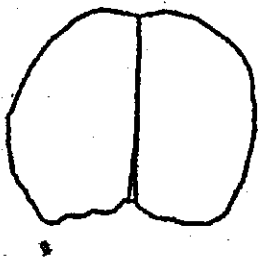
Exhibit C (Lettuce) Page 2 of 8

SHAPE OF FOURTH LEAF:

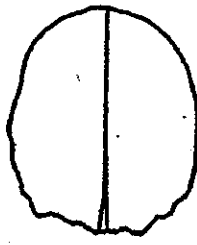
(a1.) 4

(c1.) 4

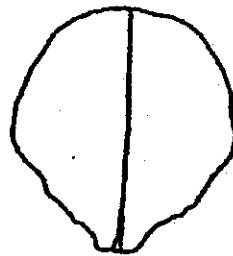
(c2.) 4



1.



2.



3.



4.



5.



6.

LENGTH/WIDTH INDEX OF FOURTH LEAF: $L/W \times 10$

(a1.) 21

(c1.) 18

(c2.) 19

APICAL MARGIN:

1= Entire

2= Crenate/Gnawed

3= Finely Dentate

4= Moderately Dentate

5= Coarsely Dentate

6= Incised

7= Lobed

8= OTHER (Specify below):

(a1.) 3

(c1.) 1

(c2.) 1

BASAL MARGIN:

(Use the options for Apical Margin above)

(a1.) 6

(c1.) 4

(c2.) 4

UNDULATION:

1= Flat

2= Slight

3= Medium

4= Marked

(a1.) 2

(c1.) 1

(c2.) 1

GREEN COLOR:

1= Yellow Green

2= Light green

3= Medium Green

4= Dark Green

5= Blue Green

6= Silver Green

7= Grey Green

(a1.) 3

(c1.) 3

(c2.) 3

ANTHOCYANIN:

DISTRIBUTION:

1= Absent

2= Margin Only

3= Spotted

4= Throughout

5= OTHER (Specify below):

(a1.) 1

(c1.) 1

(c2.) 1

CONCENTRATION:

1= Light

2= Moderate

3= Intense

(a1.) -

(c1.) -

(c2.) -

3. Cotyledon to Fourth Leaf Stage (Continued)

ROLLING:

1= Absent

2= Present

(a1.)

1

(c1.)

1

(c2.)

1

CUPPING:

1= Uncupped

2= Slight

3= Markedly

(a1.)

1

(c1.)

1

(c2.)

1

REFLEXING:

1= None

2= Apical Margin

3= Lateral Margins

(a1.)

1

(c1.)

1

(c2.)

1

4. MATURE LEAVES (Observe Harvest-Mature Outer Leaves)

NOTE: Provide color photo of a harvest-mature leaf which accurately shows color and margin characteristics.

MARGIN:

INCISION DEPTH:

(deepest penetration of the margin)

1= Absent/Shallow (Dark Green Boston)

3= Deep (Great Lakes 659)

2= Moderate (Vanguard)

(a1.)

1

(c1.)

1

(c2.)

1

INDENTATION:

(finest divisions of the margin)

1= Entire (Dark Green Boston)

2= Shallowly Dentate (Great Lakes 65)

3= Deeply Dentate (Great Lakes 659)

4= Crenate (Vanguard)

5= OTHER (Specify): _____

(a1.)

3

(c1.)

1

(c2.)

1

UNDULATIONS OF THE APICAL MARGIN:

1= Absent/ Slight (Dark Green Boston)

3= Strong (Great Lakes 659)

2= Moderate (Vanguard)

(a1.)

1

(c1.)

1

(c2.)

1

GREEN COLOR:

1= Very Light Green (Bibb)

2= Light green (Minetto)

3= Medium Green (Great Lakes)

4= Dark Green (Vanguard)

5= Very Dark Green

6= OTHER (Specify): _____

(a1.)

3

(c1.)

3

(c2.)

3

ANTHOCYANIN:

DISTRIBUTION:

1= Absent

2= Margin Only (Big Boston)

3= Spotted (Calif. Cream Butter)

4= Throughout (Prize Head)

5= OTHER (Specify below): _____

(a1.)

1

(c1.)

1

(c2.)

1

CONCENTRATION:

1= Light (Iceberg)

2= Moderate (Prize Head)

3= Intense (Ruby)

(a1.)

-

(c1.)

-

(c2.)

-

4. Mature Leaves (Continued)

SIZE:

1= Small

2= Medium

3= Large

(a1.) 3

(c1.) 3

(c2.) 3

GLOSSINESS:

1= Dull (Vanguard)

2= Moderate (Salinas)

3= Glossy (Great Lakes)

(a1.) 1

(c1.) 2

(c2.) 2

BLISTERING:

1= Absent/Slight
(Salinas)2= Moderate
(Vanguard)3= Strong
(Prize Head)

(a1.) 1

(c1.) 2

(c2.) 2

LEAF THICKNESS:

1= Thin

2= Intermediate

3= Thick

(a1.) 3

(c1.) 2

(c2.) 2

TRICHOMES:

1= Absent (Smooth)

2= Present (Spiny)

(a1.) 1

(c1.) 1

(c2.) 1

5. PLANT

SPREAD OF FRAME LEAVES:

(a1.) 35 cm

(c1.) 45 cm

(c2.) 40 cm

HEAD DIAMETER: (market trimmed with single cap leaf)

(a1.) 25 cm

(c1.) 31 cm

(c2.) 27 cm

HEAD SHAPE :

1= Flattened

2= Slightly Flattened

3= Spherical

4= Elongate

5= Non-Heading

6= OTHER (Specify): _____

(a1.) 4

(c1.) 4

(c2.) 4

HEAD SIZE CLASS:

1= Small

2= Medium

3= Large

(a1.) 3

(c1.) 3

(c2.) 3

HEAD PER CARTON:

(a1.) 24

(c1.) 24

(c2.) 24

HEAD WEIGHT:

(a1.) 1407 g

(c1.) 1121 g

(c2.) 1047 g

HEAD FIRMNESS :

1= Loose

2= Moderate

3= Firm

4= Very Firm

(a1.) 3

(c1.) 3

(c2.) 3

1

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6. BUTT

SHAPE:

1= Slightly Concave

2= Flat

3= Rounded

(a1.)

3

(c1.)

3

(c2.)

3

MIDRIB:

1= Flattened (Salinas)

2= Moderately Raised

3= Prominently Raised (Great Lakes 659)

(a1.)

3

(c1.)

2

(c2.)

2

7. CORE

DIAMETER AT BASE OF HEAD:

(a1.)

42 mm

(c1.)

36 mm

(c2.)

37 mm

RATIO OF HEAD DIAMETER/CORE DIAMETER:

(a1.)

5.9

(c1.)

8.6

(c2.)

7.3

CORE HEIGHT FROM BASE OF HEAD TO APEX:

(a1.)

77 mm

(c1.)

63 mm

(c2.)

66 mm

8. BOLTING (Give First Water Date: 28 APRIL 03) NOTE: First Water Date is the date seed first receives adequate moisture to germinate. This can and often does equal the planting date.

NUMBER OF DAYS FROM FIRST WATER DATE TO SEED STALK EMERGENCE (summer conditions):

(a1.)

57

(c1.)

63

(c2.)

65

BOLTING CLASS:

1= Very Slow

3= Medium

5= Very Rapid

2= Slow

4= Rapid

(a1.)

3

(c1.)

3

(c2.)

3

HEIGHT OF MATURE SEED STALK:

(a1.)

115 cm

(c1.)

139 cm

(c2.)

133 cm

SPREAD OF BOLTER PLANT: (at widest point)

(a1.)

33 cm

(c1.)

42 cm

(c2.)

41 cm

BOLTER LEAVES:

1= Straight

2= Curved

(a1.)

1

(c1.)

1

(c2.)

1

MARGIN:

1= Entire

2= Dentate

(a1.)

1

(c1.)

1

(c2.)

1

8. Bolting (Continued)

COLOR:

1= Light Green

2= Medium Green

3= Dark Green

(a1.) (c1.) (c2.)

BOLTER HABIT:

TERMINAL INFLORESCENCE:

1= Absent

2= Present

(a1.) (c1.) (c2.)

LATERAL SHOOTS:

1= Absent

2= Present

(a1.) (c1.) (c2.)

BASAL SIDE SHOOTS:

1= Absent

2= Present

(a1.) (c1.) (c2.)

9. MATURITY

(earliness of harvest-mature head formation)

NOTE: Complete this section for at least one season.

SEASON	APPLICATION VARIETY no. of days			MOST SIMILAR VARIETY no. of days			STANDARD REGIONAL CHECK VARIETY no. of days		
Spring									
Summer									
Fall									
Winter	1	0	0		9	0		8	9

Give planting date(s) and location(s):

Spring: _____

Summer: _____

Fall: _____

Winter: 23 OCT 03, 6 NOV 03 YUMA, AZ

1. First Water Date to Harvest

10. ADAPTATION:

PRIMARY REGIONS OF ADAPTATION (tested and proven adapted): (0= Not Tested

1= Not Adapted

2= Adapted)

Southwest (CA and/or AZ desert)

West Coast

Northeast

North-central

Southeast

OTHER (Specify): _____

SEASON:

Spring

(Area _____)

Fall

(Area _____)

Summer

(Area _____)

Winter

(Area ARIZONA, SO. CALIF.)

GREENHOUSE:

0= Not Tested

1= Not Adapted

2= Adapted

SOIL TYPE:

1= Mineral

2= Organic

3= Both

11. VIRAL DISEASES

1= Immune

3= Resistant

5= Moderately Resistant/Moderately Susceptible 7= Susceptible

9= Highly Susceptible

Big Vein	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Lettuce Mosaic	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Cucumber Mosaic	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Tomato Bushy Stunt, cause of dieback	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Turnip Mosaic	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Beet Western Yellows	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Lettuce Infectious Yellows	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
OTHER (Specify): _____	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>

12. FUNGAL/BACTERIAL DISEASES

1= Immune

3= Resistant

5= Moderately Resistant/Moderately Susceptible 7= Susceptible

9= Highly Susceptible

Corky Root Rot (Races: <u>CA 1</u>)	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Downy Mildew (Races: _____)	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Powdery Mildew	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Sclerotinia Drop	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Bacterial Soft Rot (<i>Pseudomonas</i> spp. and others)	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Botrytis (Grey Mold)	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Verticillium Wilt	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Bacterial Leaf Spot	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Anthracnose	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
OTHER (Specify): _____	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>

13. INSECTS

1= Immune

3= Resistant

5= Moderately Resistant/Moderately Susceptible 7= Susceptible

9= Highly Susceptible

Cabbage Loopers	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Root Aphids	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Green Peach Aphid	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Lettuce Aphid	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Pea Leafminer	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
OTHER (Specify): _____	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>

14. PHYSIOLOGICAL STRESSES

1= Immune

3= Resistant

5= Moderately Resistant/Moderately Susceptible 7= Susceptible

9= Highly Susceptible

Tipburn	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Heat	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Drought	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Cold	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Salt	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
Brown Rib (Rib Discoloration, Rib Blight)	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>
OTHER (Specify): _____	(a1.)	<input type="checkbox"/>	(c1.)	<input type="checkbox"/>	(c2.)	<input type="checkbox"/>

15. POSTHARVEST STRESS

1= Immune 3= Resistant

5= Moderately Resistant/Moderately Susceptible 7= Susceptible

9= Highly Susceptible

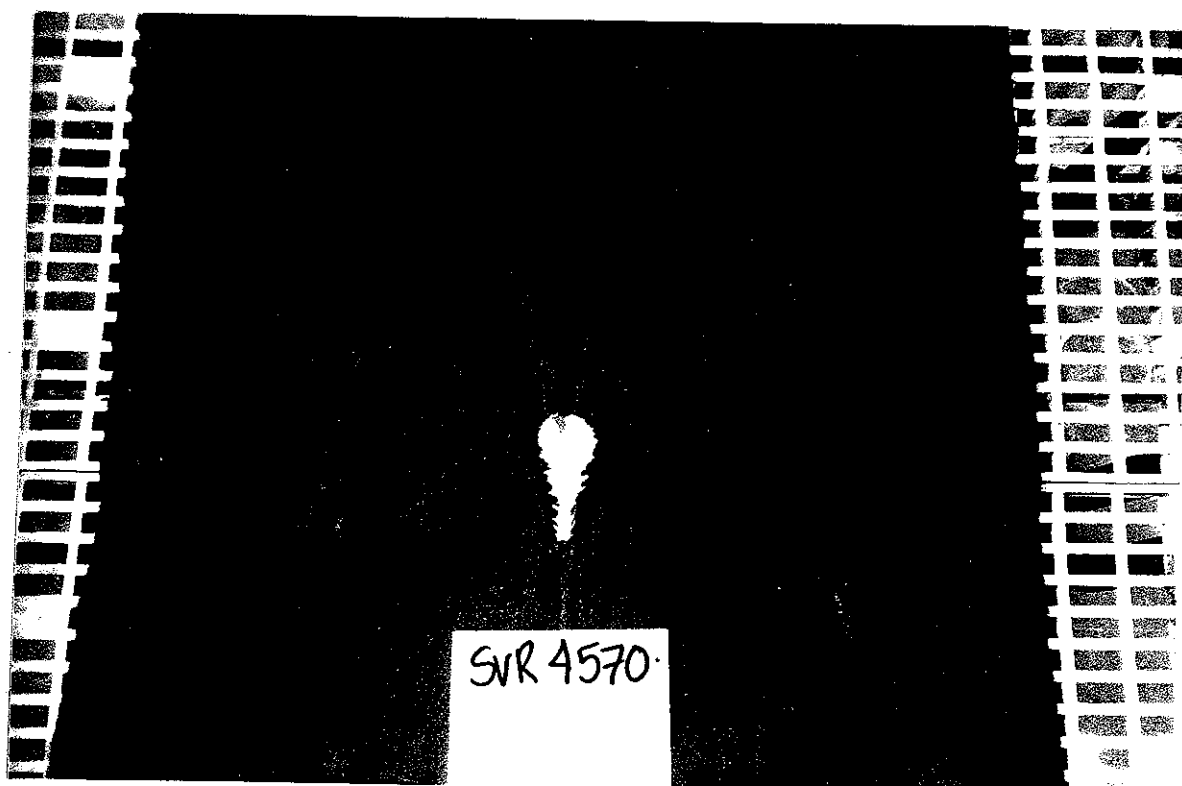
Pink Rib	(a1.) <input type="checkbox"/>	(c1.) <input type="checkbox"/>	(c2.) <input type="checkbox"/>
Russet Spotting	(a1.) <input type="checkbox"/>	(c1.) <input type="checkbox"/>	(c2.) <input type="checkbox"/>
Rusty Brown Discoloration	(a1.) <input type="checkbox"/>	(c1.) <input type="checkbox"/>	(c2.) <input type="checkbox"/>
Internal Rib Necrosis (Blackheart, Grey Rib, Grey Streak)	(a1.) <input type="checkbox"/>	(c1.) <input type="checkbox"/>	(c2.) <input type="checkbox"/>
Brown Stain	(a1.) <input type="checkbox"/>	(c1.) <input type="checkbox"/>	(c2.) <input type="checkbox"/>

16. BIOCHEMICAL OR ELECTROPHORETIC MARKERS**17. COMMENTS****Suggested Check Varieties**

	<u>TYPE</u>		<u>CHECK VARIETY</u>
1	Cutting/Leaf		Waldmann's Green
2	Butterhead		Dark Green Boston
3	Bibb		Bibb
4	Cos or Romaine		Parris Island
5	Great Lakes Group		Great Lakes 659-700
6	Vanguard Group		Vanguard
7	Salinas Group		Salinas
8	Eastern Group		Ithaca
9	Stem		Celtuce
10	Latin		Little Gem

REFERENCES

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- Davis, R.M., K.V. Subbarao, R.N. Raid, and E.A. Kurtz., 1997. "Compendium of Lettuce Diseases". APS Press, St. Paul, MN
- Michelmore, R. W., J. M. Norwood, D. S. Ingram, I. R. Crute and P. Nicholson. 1984. The inheritance of virulence in *Bremia lactucae* to match resistance factors 3, 4, 5, 6, 8, 9, 10 and 11 in lettuce (*Lactuca sativa*). Plant Pathology 32:176-177.
- Norwood, J. M., R. W. Michelmore, I. R. Crute and D. S. Ingram. 1983. "The inheritance of specific virulence of *Bremia lactucae* (Downy mildew) to match R-factors 1, 2, 4, 6 and 11 in lettuce (*Lactuca sativa*)". Plant Pathology 32:176-177.
- Rodenburg, C.M., et al., 1960. "Varieties of Lettuce. An International Monograph," Instituut voor de Verdeling van Tuinbouwgewassen (IVT), Wageningen, NL
- Ryder, E.J., 1999. "Lettuce, Endive and Chicory". CABI Publications, Wallingford, UK



Fourth leaf from 20-day old seedlings, SVR 4570



Harvest -mature leaf, SVR 4570

RAD
9/2/06

PS 6545701

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICEEXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIPApplication is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426). *AKO 9/2/06*

1. NAME OF APPLICANT(S) Seminis Vegetable Seeds, Inc.	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER PS 6545701	3. VARIETY NAME PS 6545701
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) 2700 Camino del Sol Oxnard, CA 93030-7967	5. TELEPHONE (include area code) 805 647 1572	6. FAX (include area code) 805 918 2545
7. PVPO NUMBER		

200400253

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain

☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. National or a U.S. based company? If no, give name of country

☒ YES ☐ NO
10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (if needed, use the reverse for extra space):

The variety named in this application was developed by the Seminis Vegetable Seeds, Inc., employee (breeder) named below. By agreement between employee and Seminis Vegetable Seeds, Inc., all rights to any invention, discovery, or development made by an employee are assigned to the Company. No rights to such invention, discovery, or development are retained by the employee.

Employee (Breeder): Bill Waycott

Site Location: Arroyo Grande

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

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